

App. No. 10/825,033  
Office Action Dated June 30, 2006

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### REMARKS

Favorable reconsideration of this patent application is respectfully requested in view of the above amendments and following remarks. Claims 1, 6, and 9 are amended. Claims 1, 2-3, 6, and 9-12 are pending. No claims have been amended.

Claims 1-3 and 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Horie et al. (U.S. Patent No. 6517642). Applicant respectfully traverses this rejection.

Claim 1 recites a method for forming a ferroelectric thin film, and includes (1) forming a seed layer containing an ultra-fine particle powder comprised of an element constituting the ferroelectric thin film and being present in the seed layer with a concentration in the range of 0.00001 wt% to about 1 wt%, and (2) forming the ferroelectric thin film on the seed layer through crystallization.

Horie et al., however, does not disclose or suggest the features required by claim 1. Horie et al. does not teach or suggest (1) forming a seed layer containing an ultra-fine particle powder comprised of an element constituting the ferroelectric thin film, or (2) forming the ferroelectric thin film on the seed layer through crystallization. Rather than forming a seed layer, Horie et al. produces a thin film of metal or metal compound by coating a substrate with a fine particle dispersion, removing the solvent, and then annealing the particles to form a uniform film. In fact, Horie et al. does not form any seed layer.

In the Advisory Action dated March 27, 2006, however, the previous Examiner commented that the process the rejection relies upon is a "cyclic process where in the first cycle a thin layer of dispersion liquid with a low concentration of particles, where after the drying step, the ultrafine particles are still present and where additional thin layers are formed." (Col. 7, lines 35-36 and Col. 8, lines 45-50.) The Advisory Action further contended that, in at least some of the processes of Horie et al., a seed layer is formed based on the above teachings. Applicant respectfully disagrees and contends that these further references to Horie et al. are not relevant. In fact, there is no reference at all in Horie et al. to forming a seed layer in the noted sections or anywhere else in the reference. To the contrary, Horie et al. teaches coating a substrate with ultrafine particle dispersion liquid through a plurality of coating cycles to complete the film deposition. (Col. 7, lines 37-38.) There is no reasonable basis in the reference itself to designate

App. No. 10/825,033  
Office Action Dated June 30, 2006

one portion of the cyclic process as forming a seed layer as required by claim 1. Rather, the cyclic process of multiple coatings in Horie et al. suggests the contrary, where multiple coatings are necessary for forming its film and that a seed layer is not formed. For at least these reasons, Horie et al. does not teach or suggest forming a seed layer.

Claim 1 is further distinguished from Horie et al., because claim 1 requires that the ultra-fine particle powder be present in the seed layer with a concentration in the range of 0.00001 wt% to about 1 wt%. As noted in the Office Action, Horie et al. does not disclose a concentration of ultra-fine particle powder. Further, there is no reasonable suggestion in the reference to employ the low particle concentrations claimed. Applicant has discovered that the claimed particle concentration range is particularly desirable in forming a seed layer for crystallization. (Page 13, line 6-12.) However, as noted above, Horie et al. is not forming a seed layer and employs a different process in which a continuous metal layer is formed upon melting. There is no reasonable basis to assume that Horie et al. could form its thin film through melting by using such low particle concentrations. Therefore, Horie et al. does not teach the required concentrations of claim 1, and in fact leads one away from such concentrations.

For at least the foregoing, Horie et al. does not teach or suggest the features required by claim 1. Therefore, Applicant respectfully submits that claim 1 and dependent claims therefrom are patentable over Horie et al.

Favorable reconsideration and withdrawal of the rejection are respectfully requested.

Claims 6 and 9 are respectively rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura et al. (EP 940856) in view of Horie et al. and over Kim (USPN 6020233) in view of Horie et al. Applicant respectfully traverses these rejections.

These rejections rely on Horie et al. for the same basic teaching as the rejection of claim 1, and are incorrect for the same reasons already noted.

Withdrawal of the rejections are respectfully requested.

App. No. 10/825,033  
Office Action Dated June 30, 2006

In view of the above, Applicant believes that the pending claims are allowable. Favorable reconsideration in the form of a Notice of Allowance is requested. Any questions regarding this communication can be directed to the undersigned attorney.

Respectfully Submitted,

  
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